

FIG. 1

PIN ASSIGNMENTS		PIN #	SYMBOL	DESCRIPTION
VCC	1	1	VCC	SUPPLY VOLTAGE
COM	2	2	COM	IC POWER & SIGNAL GROUND
VCO	3	3	VCO	VOLTAGE CONTROLLED OSCILLATOR INPUT
FMIN	4	4	FMIN	MINIMUM FREQUENCY SETTING
		5	LO	LOW-SIDE GATE DRIVER OUTPUT
		6	VS	HIGH-SIDE FLOATING RETURN
		7	HO	HIGH-SIDE GATE DRIVER OUTPUT
		8	VB	HIGH-SIDE GATE DRIVER FLOATING SUPPLY

FIG. 2

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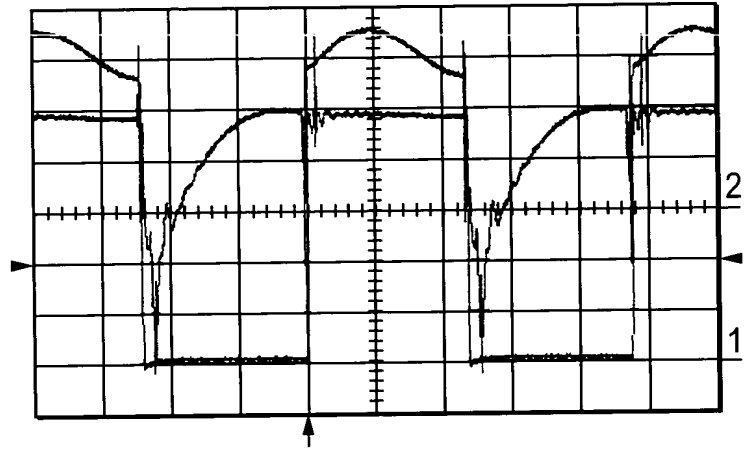


FIG. 5

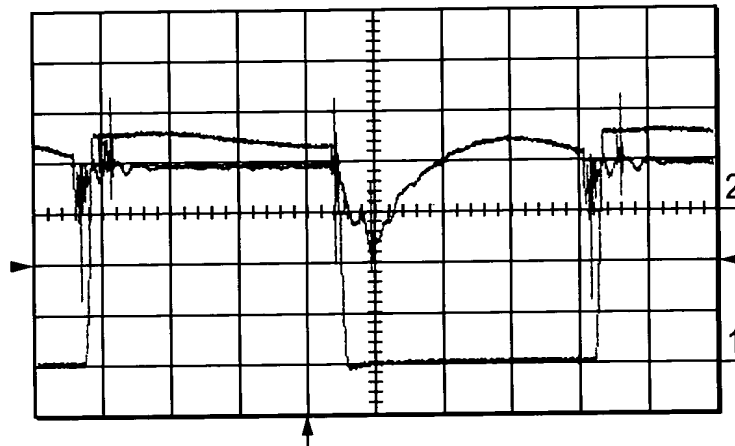
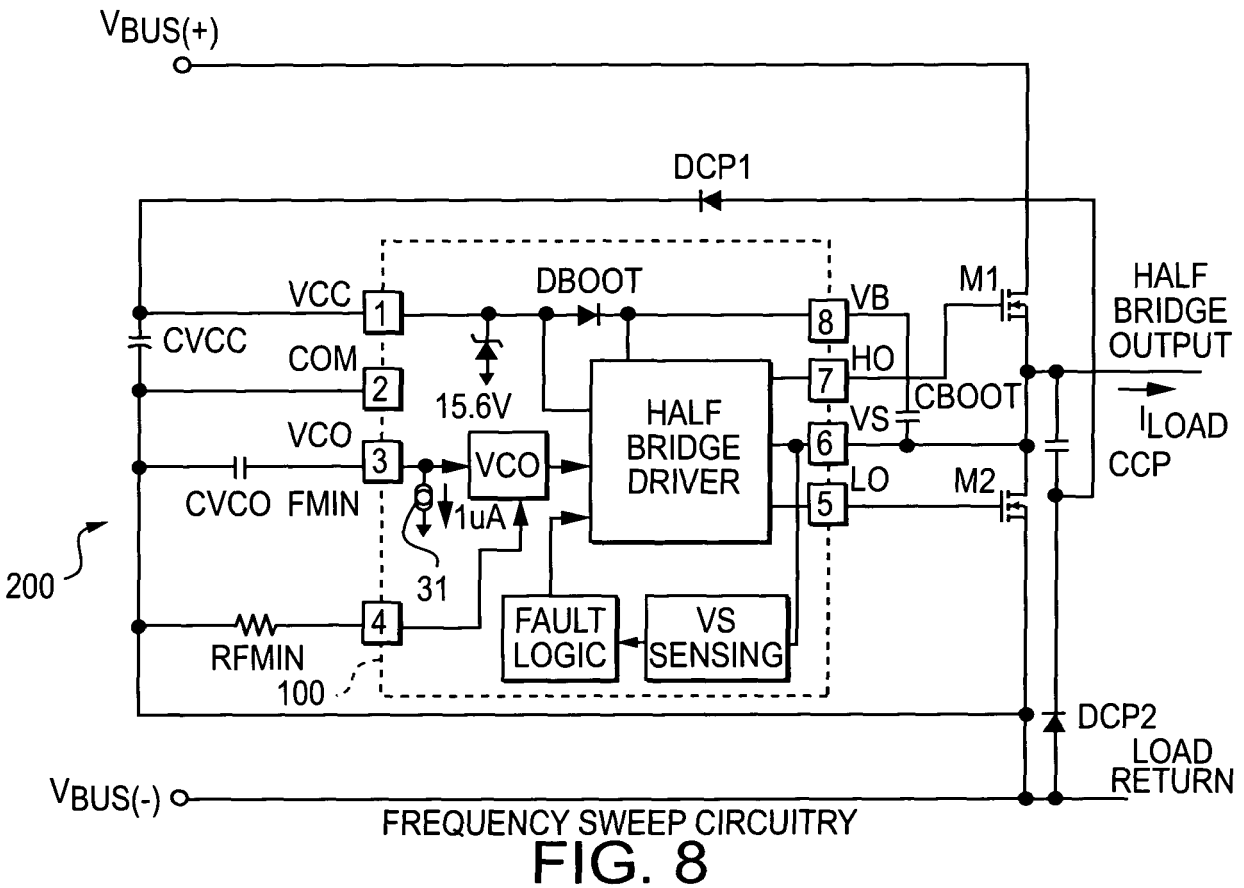
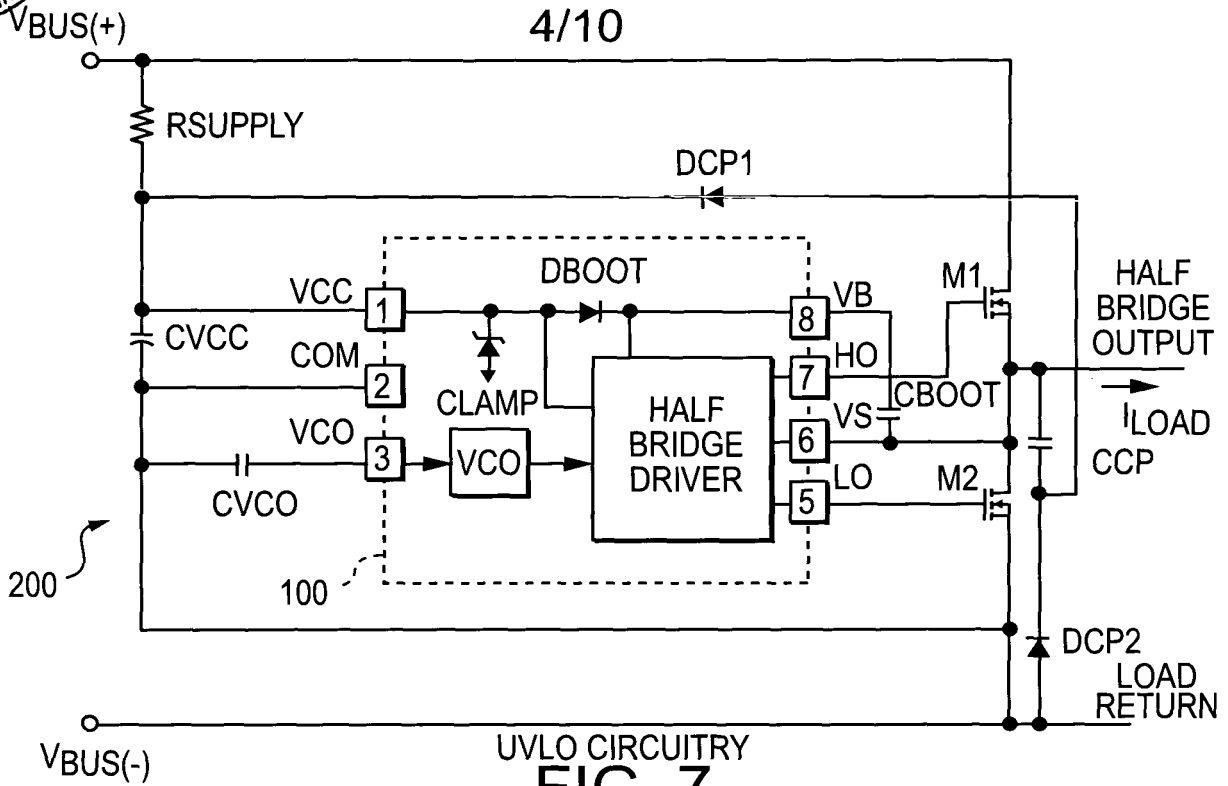


FIG. 6



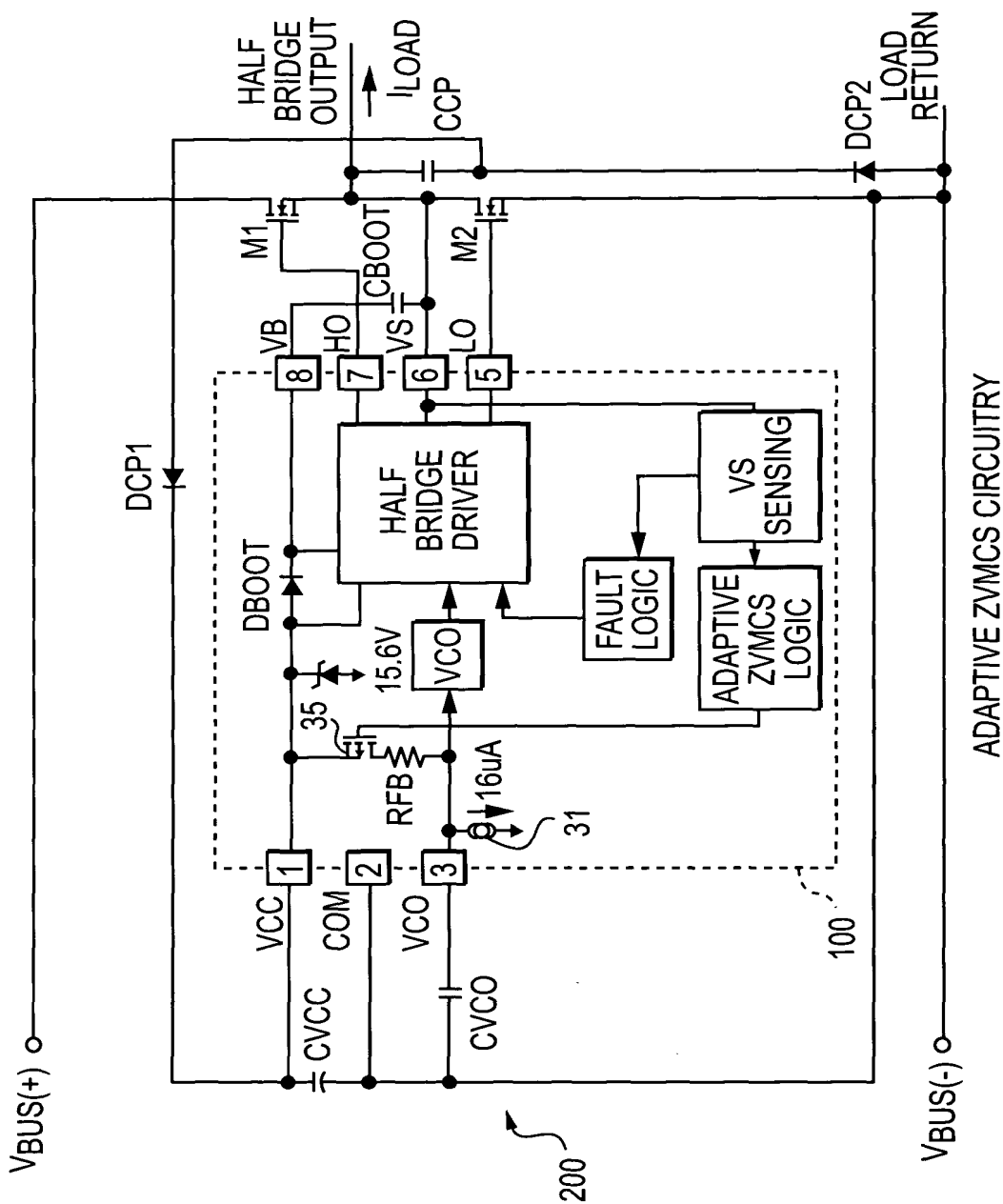


FIG. 9

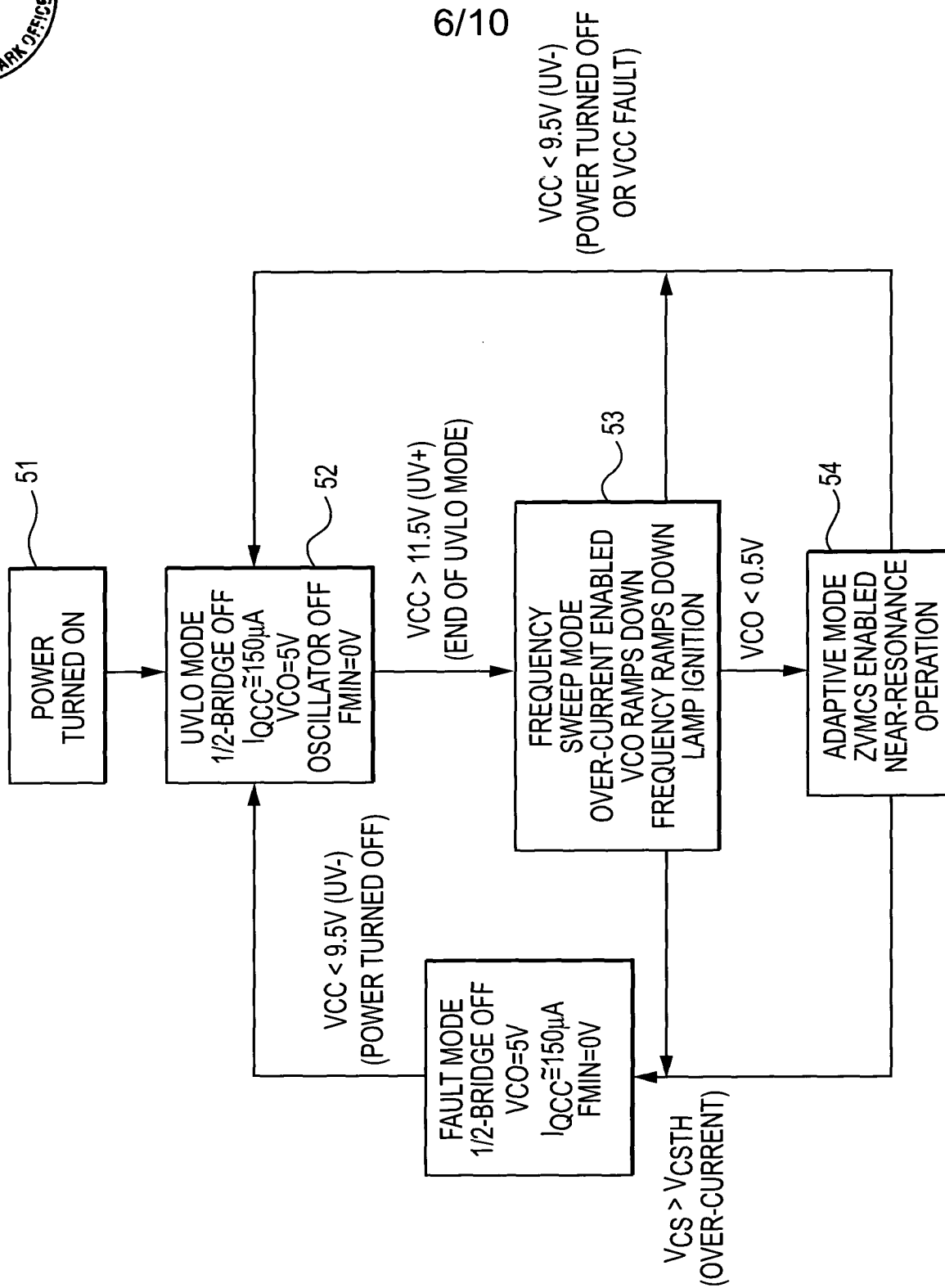


FIG. 10



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TABLE 1

RECOMMENDED OPERATING CONDITIONS
FOR PROPER OPERATION THE DEVICE SHOULD BE USED WITHIN THE RECOMMENDED CONDITIONS.

SYMBOL	DEFINITION	MIN	MAX	UNITS
V _{BS}	HIGH-SIDE FLOATING SUPPLY VOLTAGE	V _{CC} - 0.7	V _{CLAMP}	V
V _S	STEADY STATE HIGH-SIDE FLOATING SUPPLY OFFSET VOLTAGE	-1	600	
V _{CC}	SUPPLY VOLTAGE	V _{CCUV+}	V _{CLAMP}	
I _{CC}	SUPPLY CURRENT	NOTE 2	10	mA
R _{FMIN}	MINIMUM FREQUENCY SETTING RESISTANCE	10	100	kΩ
V _{VCO}	VCO PIN VOLTAGE	0	5	V
T _J	JUNCTION TEMPERATURE	-25	125	°C

NOTE 2: ENOUGH CURRENT SHOULD BE SUPPLIED INTO THE VCC PIN TO KEEP THE INTERNAL 15.6V ZENER CLAMP DIODE ON THIS PIN REGULATING ITS VOLTAGE, V_{CLAMP}.



TABLE 2

ABSOLUTE MAXIMUM RATINGS
ABSOLUTE MAXIMUM RATINGS INDICATE SUSTAINED LIMITS BEYOND WHICH DAMAGE TO THE DEVICE MAY OCCUR.
ALL VOLTAGE PARAMETERS ARE ABSOLUTE VOLTAGES REFERENCED TO COM, ALL CURRENTS ARE DEFINED POSITIVE INTO ANY LEAD. THE THERMAL RESISTANCE AND POWER DISSIPATION RATINGS ARE MEASURED UNDER BOARD MOUNTED AND STILL AIR CONDITIONS.

SYMBOL	DEFINITION	MIN	MAX	UNITS
V _B	HIGH-SIDE FLOATING SUPPLY VOLTAGE	-0.3	625	V
V _S	HIGH-SIDE FLOATING SUPPLY OFFSET VOLTAGE	V _B - 25	V _B + 0.3	
V _{HO}	HIGH-SIDE FLOATING OUTPUT VOLTAGE	V _S - 0.3	V _B + 0.3	
V _{LO}	LOW-SIDE OUTPUT VOLTAGE	-0.3	V _{CC} + 0.3	
I _{OMAX}	MAXIMUM ALLOWABLE OUTPUT CURRENT (HO, LO) DUE TO EXTERNAL POWER TRANSISTOR MILLER EFFECT	-500	500	mA
V _{VCO}	VOLTAGE CONTROLLED OSCILLATOR INPUT VOLTAGE	-0.3	V _{CC} + 0.3	V
I _{CC}	SUPPLY CURRENT (NOTE 1)	-20	20	mA
dV/dt	ALLOWABLE OFFSET VOLTAGE SLEW RATE	-50	50	V/ns
P _D	PACKAGE POWER DISSIPATION @ T _A ≤ +25°C P _D = (T _{JMAX} - T _A)/R _{θJA}	---	1	W
		---	0.625	
R _{θJA}	THERMAL RESISTANCE, JUNCTION TO AMBIENT (8-PIN SOIC)	---	125	°C/W
		---	200	
T _J	JUNCTION TEMPERATURE	-55	150	°C
T _S	STORAGE TEMPERATURE	-55	150	
T _L	LEAD TEMPERATURE (SOLDERING, 10 SECONDS)	---	300	

NOTE 1: THIS IC CONTAINS A ZENER CLAMP STRUCTURE BETWEEN THE CHIP V_{CC} AND COM, WHICH HAS A NOMINAL BREAKDOWN VOLTAGE OF 15.6V. PLEASE NOTE THAT THIS SUPPLY PIN SHOULD NOT BE DRIVEN BY A DC, LOW IMPEDANCE POWER SOURCE GREATER THAN THE VCLAMP SPECIFIED IN THE ELECTRICAL CHARACTERISTICS SECTION.



TABLE 3A
TABLE 3B

TABLE 3

TABLE 3A

ELECTRICAL CHARACTERISTICS
 $V_{CC} = V_{BS} = V_{BIAS} = 14V \pm 0.25$, $C_{LO} = C_{HO} = 1000 \text{ pF}$, $T_A = 25^\circ\text{C}$ UNLESS OTHERWISE SPECIFIED.

SYMBOL	DEFINITION	MIN	TYPE	MAX	UNITS	TEST CONDITIONS
SUPPLY CHARACTERISTICS						
V_{CCUV+}	V_{CC} SUPPLY UNDERVOLTAGE POSITIVE GOING THRESHOLD	10.5	11.5	12.5	V	V_{CC} RISING FROM 0V
V_{CCUV-}	V_{CC} SUPPLY UNDERVOLTAGE NEGATIVE GOING THRESHOLD	8.5	9.5	10.5		V_{CC} FALLING FROM 14V
V_{UVHYS}	V_{CC} SUPPLY UNDERVOLTAGE LOCKOUT HYSTERESIS	1.5	2.0	3.0		
I_{QCCUV}	UVLO MODE QUIESCENT CURRENT	50	120	200	μA	$V_{CC}=11V$
I_{QCCFLT}	FAULT-MODE QUIESCENT CURRENT	---	180	---		
I_{QCC}	QUIESCENT V_{CC} SUPPLY CURRENT	---	1.8	---	mA	$V_{CC}=14V$
I_{CC50k}	V_{CC} SUPPLY CURRENT, $f = 50\text{kHz}$	---	1.8	---		
V_{CLAMP}	V_{CC} ZENER CLAMP VOLTAGE	14.5	15.6	16.5	V	$I_{CC}=10\text{mA}$
FLOATING SUPPLY CHARACTERISTICS						
I_{QBS0}	QUIESCENT V_{BS} SUPPLY CURRENT	-1	0	5	μA	$V_{HO} = V_S$
I_{QBS1}	QUIESCENT V_{BS} SUPPLY CURRENT	---	28	---		$V_{HO} = V_B$
V_{BSMIN}	MINIMUM REQUIRED V_{BS} VOLTAGE FOR PROPER HO FUNCTIONALITY	---	2.5	---	V	
I_{ILK}	OFFSET SUPPLY LEAKAGE CURRENT	---	---	50	μA	$V_B = V_S 600V$



OSCILLATOR I/O CHARACTERISTICS						
FVCO(MIN)	MINIMUM OSCILLATOR FREQUENCY	---	30	---	kHz	VCO=0V, RFMIN=39K
FVCO(MAX)	MAXIMUM OSCILLATOR FREQUENCY	---	110	---	---	VCO=5V, FRMIN=39K
D	OSCILLATOR DUTY CYCLE	---	50	---	%	
TDLO	LO OUTPUT DEADTIME	---	1.2	---	μS	RFMIN=39K
TDHO	HO OUTPUT DEADTIME	---	1.2	---	μS	RFMIN=39K
IVCOPH	PREHEAT MODE & FREQUENCY SWEEP MODE VCO PIN DISCHARGE CURRENT	---	1.0	---	μA	CVO<VCC
IVCOADPT	ADAPTIVE MODE VCO PIN DISCHARGE CURRENT	---	16.0	---	μA	
VVCOFLT	FAULT MODE & UVLO MODE VCO PIN VOLTAGE	---	5	---	V	
GATE DRIVER OUTPUT CHARACTERISTICS						
VOL	LOW LEVEL OUTPUT VOLTAGE (HO OR LO)	---	---	100	mV	
VHL	HIGH LEVEL OUTPUT VOLTAGE (HO OR LO)	---	---	100	mV	
TRISE	TURN ON RISE TIME	---	---	150	NS	
TFALL	TURN OFF FALL TIME	---	---	100	NS	
PROTECTION CHARACTERISTICS						
VCSTH	PEAK OVER CURRENT LATCH THRESHOLD VOLTAGE	---	5	---	V	
MINIMUM FREQUENCY SETTING CHARACTERISTICS						
VFMIN	FMIN PIN VOLTAGE DURING NORMAL OPERATION	---	5.1	---	V	
VFMINFLT	FMIN PIN VOLTAGE DURING FAULT MODE	---	0.0	---	V	VCS > VCSTH

TABLE 3B